What Every Member of the Trade Community Should Know About:

Classification of Flat Panel Displays

An Informed Compliance Publication

March 2001

U.S. CUSTOMS

NOTICE:

This publication is intended to provide guidance and information to the trade community. It reflects the Customs Service's position on or interpretation of the applicable laws or regulations as of the date of publication, which is shown on the front cover. It does not in any way replace or supersede those laws or regulations. Only the latest official version of the laws or regulations is authoritative.

Publication History

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PREFACE

On December 8, 1993, Title VI of the North American Free Trade Agreement Implementation Act (Pub. L. 103-182, 107 Stat. 2057), also known as the Customs Modernization or "Mod" Act, became effective. These provisions amended many sections of the Tariff Act of 1930 and related laws.

Two new concepts that emerge from the Mod Act are "***informed compliance***" and "***shared responsibility***," which are premised on the idea that in order to maximize voluntary compliance with Customs laws and regulations, the trade community needs to be clearly and completely informed of its legal obligations. Accordingly, the Mod Act imposes a greater obligation on Customs to provide the public with improved information concerning the trade community's rights and responsibilities under the Customs and related laws. In addition, both the trade and Customs share responsibility for carrying out these requirements. For example, under Section 484 of the Tariff Act as amended (19 U.S.C. §1484), the importer of record is responsible for using reasonable care to enter, classify and determine the value of imported merchandise and to provide any other information necessary to enable Customs to properly assess duties, collect accurate statistics, and determine whether other applicable legal requirements, if any, have been met. The Customs Service is then responsible for fixing the final classification and value of the merchandise. An importer of record's failure to exercise reasonable care could delay release of the merchandise and, in some cases, could result in the imposition of penalties.

The Office of Regulations and Rulings has been given a major role in meeting Customs informed compliance responsibilities. In order to provide information to the public, Customs has issued a series of informed compliance publications, and videos, on new or revised Customs requirements, regulations or procedures, and a variety of classification and valuation issues.

The National Commodity Specialist Division of the Office of Regulations and Rulings has prepared this publication on ***Classification of Flat Panel Displays*** as part of a series of informed compliance publications regarding the classification and origin of imported merchandise. We sincerely hope that this material, together with seminars and increased access to Customs rulings, will help the trade community to improve, as smoothly as possible, voluntary compliance with Customs laws.

The material in this publication is provided for general information purposes only. Because many complicated factors can be involved in customs issues, an importer may wish to obtain a ruling under Customs Regulations, 19 CFR Part 177, or to obtain advice from an expert who specializes in customs matters, for example, a licensed customs broker, attorney or consultant. Reliance solely on the information in this pamphlet may not be considered reasonable care.

Comments and suggestions are welcomed and should be addressed to the Assistant Commissioner at the Office of Regulations and Rulings, U.S. Customs Service, 1300 Pennsylvania Avenue, NW, Washington, D.C. 20229.

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TABLE OF CONTENTS

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Introduction

When goods are imported into the Customs Territory of the United States (the fifty states, the District of Columbia and Puerto Rico), they are subject to certain formalities involving the U.S. Customs Service. In almost all cases, the goods are required to be "entered," that is, declared to the Customs Service, and are subject to detention and examination by Customs officers to insure compliance with all laws and regulations enforced or administered by the United States Customs Service. As part of the entry process, goods must be "classified" (determined where in the U.S. tariff system they fall) and their value must be determined. Pursuant to the Customs Modernization Act, it is now the responsibility of the importer of record to use "reasonable care" to "enter," "classify" and "value" the goods and provide any other information necessary to enable the Customs Service to properly assess duties, collect accurate statistics, and determine whether all other applicable legal requirements are met.

Classifying goods is important not only for duty purposes, but also for determining whether the goods are subject to quotas, restraints, anti-dumping or countervailing duties, embargoes or other restrictions. The act of classifying goods is complex and requires an importer to be familiar with the *Harmonized Tariff Schedule of the United States* (HTSUS), its 99 chapters, rules of interpretation, and notes. A detailed discussion of the HTSUS may be found in a companion publication entitled, *What Every Member of the Trade Community Should Know About Tariff Classification.* Customs valuation requirements are separately discussed in a companion publication entitled, *What Every Member of the Trade Community Should Know About Customs Value.* Both of these publications are available from the Customs World Wide Web pages on the Internet (see the Additional Information section for information on accessing these sources and obtaining additional Customs Service publications).

Classification of merchandise under the Harmonized Tariff Schedule of the United States is in accordance with the General Rules of Interpretation (GRI's). GRI 1 provides that classification shall be determined according to the terms of the headings and any relative section or chapter notes.

The *Harmonized Commodity Description and Coding System Explanatory Notes* (referred to as E.N. or *Explanatory Notes*)[1] constitute the official interpretation of the Harmonized System at the international level. While not legally binding nor dispositive, the E.N.s provide a commentary on the scope of each heading of the Harmonized System and are generally indicative of the proper interpretation of these headings. See T.D. 89-80, 54 FR 35127, 35128 (August 23, 1989).

This publication discusses the tariff classification and related issues for flat panel displays. Flat panel displays are rapidly becoming the medium for the visual presentation of electronic data and information. Since their humble beginnings

[1] The *Harmonized Commodity Description and Coding System Explanatory Notes - Second Edition* is © 1996 Customs Co-operation Council (working name: World Customs Organization (WCO)), Rue du Marché 30, B-1210 Brussels, Belgium.

approximately 20 years ago, they have steadily advanced in technology and affordability, and, consequently, in popularity. Today, they are commonplace in a wide range of products from personal computers to camcorders to industrial equipment. In short, they are electronic devices that are designed to display text or graphics through the conversion of information received as electrical signals into visible images on a display glass. As opposed to the conventional cathode ray tube (CRT), flat panel displays are lightweight and more portable, thus enhancing their practical use in a technology driven environment.

Terminology

For purposes of this discussion, the term “flat panel display module” will be used to refer to a complete flat panel display. Customs has defined a flat panel display module as follows:

> A thin flat electronic device consisting of a glass sandwich and associated electronic systems, used to display information in text (alphanumeric), graphic, or image form. It converts information received as electronic signals into images on a screen. The glass panels contain rows and columns of dot-like pixels (picture elements) that are activated or deactivated by an electronic impulse to make the images.

A flat panel display module generally consists of the following components:

> 1. *Display Glass Assembly* – Processed glass substrate that typically incorporates patterned row and column electrodes, a material that reacts to a change in voltage (e.g., liquid crystal, gas, film phosphor), and contact pads for interconnecting the drive electronics to each row and column electrode.
>
> 2. *Drive Electronics* – Integrated circuits that provide voltages to drive the row and column electrodes. Drive electronics are customized according to the type, size and capability of the glass display assembly.
>
> 3. *Control Electronics* – Integrated circuits that decode and interpret the signals sent by the end-user system and transmit the signals to the drive electronics. Control electronics are also customized for the individual display.
>
> 4. *Mechanical Package* – The frame that mounts the printed circuit boards for the drive and control electronics to the display glass. The mechanical package also adds strength and protection to the display glass and provides the means whereby the user mounts the display into the end-user system.
>
> 5. *Power Supply* – An electronic circuit that provides appropriate voltages for the flat panel display. Many of the voltages required by the displays

are not standard and require customized power supplies. The power supply may be placed on a module separate from the other electronic boards.

There are several types of commercially known flat panel display modules. Customs has applied the following definitions, based on the material used to display the visible character/graphic information:

Liquid Crystal (LCD) – Incorporates liquid crystal display fluids in a glass envelope with coatings on the internal glass. This fluid "lights up" when electric current interacts with the fluid.

Light Emitting Diode (LED) – Uses a semiconductor diode that emits light when charged. LED's are usually red.

Electroluminescent (EL) – Zinc sulfide or other materials that emit fluorescence when a current is applied.

Vacuum Fluorescent Display (VFD) – Consists of a cathode, grid, and anode sealed in a high-vacuum glass envelope. The cathode is a directly heated, fine tungsten wire coated by an alkaline earth metal oxide. The grid is a thin metal mesh, and the anode is a segment or dot formed as a conductive electrode on which phosphor is printed. The shape of the phosphor segment or the arrangement of illuminated phosphor dots creates the characters or symbols.

Gas Plasma – Electrical current interacts with electrodes causing ultraviolet radiation. This activates red, green and blue phosphor, thereby producing colored light.

Classification

In 1997, Customs conducted an extensive review of the classification, under the Harmonized Tariff Schedule of the United States (HTSUS), of flat panel display modules and related products. As a result, a number of Headquarters rulings have been issued that have addressed this issue. Accordingly, the following guidelines should now be used when classifying all flat panel display modules. It should be noted that although certain **finished** products, such as video monitors, may be classified in one of the HTSUS headings mentioned below, these guidelines only pertain to the classification of display modules that are incorporated into such finished products.

Heading 8471, HTSUS

Flat panel display modules, i.e., a flat panel, regardless of the type (LED, LCD, EL, or other), with row and column drivers, are classifiable under subheadings 8471.60.30 and 8471.60.45 only if they meet the following requirements as set forth in Note 5(b), Chapter 84, HTSUS:

- They are connectable to a central processing unit (CPU)
- They are capable of receiving data from an automatic data processing (ADP) system
- They are principally or solely used in an ADP system

The applicable HTSUS provisions (italicized and in bold) are as follows:

8471		Automatic data processing machines and units thereof; magnetic or optical readers, machines for transcribing data onto data media in coded form and machines for processing such data, not elsewhere specified or included (con.):
8471.60		Input or output units, whether or not containing storage units in the same housing:
8471.60.10		Combined input/output units
		With cathode-ray tube (CRT):
	35	Color
	65	Other
	95	Other
		Other:
8471.60.20	00	Keyboards
		Display units:
8471.60.30	***00***	***Without cathode-ray tube (CRT), having a visual display diagonal not exceeding 30.5 cm***
		Other:
8471.60.35	00	With color cathode-ray tube (CRT)
8471.60.45		***Other***
	40	With cathode-ray tube (CRT)
	80	***Other***

The issue of principal/sole use has been difficult to ascertain in the past. As a result of this review by Customs, it has been determined that only specific size flat panel display modules are principally used in ADP systems and conform to industry standards.

In HQ 957795, dated March 3, 1997, the following pixel size configurations were determined to be principally used in ADP:

640x480 (VGA - Video Graphics Array)
640x400 (EGA - Enhanced Graphics Adapter)
640x350 (EGA)
640x200(CGA - Color Graphics Adapter)

In addition, HQ 959945, dated November 19, 1997, ruled that

1024x760 (XGA - Extended Graphics Array),
800x600 (SVGA - Super Video Graphics Array)
480x320 (1/2 VGA)

were also classifiable in heading 8471 based on principal use. It should be noted that principal use for the 480x320 (1/2 VGA) was based on limited information for only two models of a Personal Digital Assistant (PDA).

Heading 8531, HTSUS

In order for a flat panel display module to be considered an indicator panel classifiable under subheadings 8531.20.00 (LCD/LED) or 8531.80.90 (Other), there is one fundamental requirement. Since indicator panels are listed as an example of a type of visual signaling apparatus under heading 8531, an indicator panel classified under subheading 8531.20.00 or 8531.80.90 must be of the type that is *principally used to perform a signaling function*. With respect to indicator panels, the term "signaling" has been ruled on as the providing of certain limited indication information to a user, such as measurement, coordinates, flow, etc. In this regard, HQ 955062, dated March 21, 1994, should be noted. Products such as flat panel display modules for bar code scanners, price link displays and global positioning devices are among the items considered classifiable under subheadings 8531.20.00 and 8531.80.90 based on their use as a type of signaling device.

The applicable HTSUS provisions (italicized and in bold) are as follows:

8531		Electric sound or visual signaling apparatus (for example, bells, sirens, indicator panels, burglar or fire alarms), other than those of heading 8512 or 8530; parts thereof:
		*** * ***
8531.20.00		***Indicator panels incorporating liquid crystal devices (LCD's) or light emitting diodes (LED's)***
	20	***Incorporating LCD's***
	40	***Other***
8531.80		Other apparatus:
8531.80.40	00	Paging alert devices.
		Other:
8531.80.70	***00***	***Flat panel displays of paging alert devices of subheading 8531.80.40***
8531.80.90		***Other***
		Indicator panels:
	10	***Incorporating electric discharge (fluorescent) devices***
	25	***Other***

During the process of establishing a principal use standard for flat panel display modules used in ADP applications, Customs issued several rulings that classified certain "graphic" display modules in heading 8531 based on the finding that the principal use of those particular pixel configurations was in applications that were considered "signaling." The following rulings provide examples of the types of "graphic" flat panel display modules that are classifiable in either subheadings 8531.20.00 or 8531.80.90:

HQ 959945
HQ 960110
HQ 960317
HQ 960315
HQ 960314

The information supplied by these modules was determined to be of the type that is considered of a limited indicating nature. Although the concept of "limited indication" can be somewhat subjective, the body of rulings on this issue should provide concrete examples as to the type of "graphic" display modules considered classifiable in subheadings 8531.20.00 or 8531.80.90

In addition to the "graphic" type display module, there is a type that provides information in an alpha/numeric format. This is referred to as a "character" display module. In HQ 952973, dated August 5, 1993, it was held that only those "character" display modules that are limited by design and function to that of "signaling" are classifiable in heading 8531. Furthermore, this ruling established a guideline for "limited by design and function" by stating that "character" display modules having 80 or less characters are restricted to signaling functions by virtue of their operational limitations. An example of this can be found in HQ 960608, dated November 19, 1997, in which several 4X40 character (4 lines, 40 characters per line) LCD modules did not meet the terms of heading 8531 because they exceeded the 80 character limitation.

Other HTSUS Headings

Flat panel display modules not classifiable in subheadings 8471.60.30 and 8471.60.45, or in subheadings 8531.20.00 and 8531.80.90, are probably classified in either subheading 9013.80 if LCD, or in subheading 8543.89.92 if other than LCD. Heading 9013 covers, in part, Liquid Crystal Devices not constituting articles provided for more specifically in other headings. An LCD module that is not of the size determined to be principally used in ADP applications (heading 8471), or that is not considered an indicator panel (heading 8531), is classifiable in subheading 9013.80 as a liquid crystal device.

The applicable HTSUS provisions (italicized and in bold) are as follows:

9013		Liquid crystal devices not constituting articles provided for more specifically in other headings; lasers, other than laser diodes; other optical appliances and instruments, not specified or included elsewhere in this chapter; parts and accessories thereof:
		*** * ***
9013.80		Other devices, appliances and instruments:
9013.80.20	00	Hand magnifiers, magnifying glasses, loupes, thread counters and similar apparatus
9013.80.40	00	Door viewers (door eyes)

9013.80.70	***00***	***Flat panel displays other than for articles of heading 8528***
9013.80.90	***00***	***Other***

Likewise, a flat panel display module *other than an LCD type* that does not meet the requirements for heading 8471or heading 8531 is classifiable in subheading 8543.89.9200 as an other electrical machine or apparatus, ..., not specified or included elsewhere in Chapter 85.

The applicable HTSUS provision (italicized and in bold) is as follows:

8543		Electrical machines and apparatus, having individual functions, not specified or included elsewhere in this chapter; parts thereof:
		*** * ***
		Other machines and apparatus:
		***
		Other:
		***
		Other:
8543.89.92	***00***	Electrical machines with translation or dictionary functions; ***flat panel displays other than for articles of heading 8528***

In addition to complete LCD flat panel display modules, subheading 9013.80 (specifically, 9013.80.90) also applies to the classification of glass sandwiches (sometimes referred to as glass cells or flat panel displays). Glass sandwiches (glass cells/flat panel displays) consist of two pieces of processed glass with a layer of liquid crystal material between the pieces of glass. There are no control electronics (row and column drivers) in a glass sandwich, although, as noted in the Explanatory Notes of the Harmonized Commodity Description and Coding System, electrical connections may or may not be included.

In this regard, *Sharp Microelectronics Technology, Inc. v. U.S.,* 20 CIT 793 (1996), 932 F.Supp 1499) affd. 122 F. 3d 1446 (Fed. Cir. 1997) dated Sept. 2, 1997 should be noted. Sharp's glass cells were designed for use as part of the display screen for a computer. Both the Court of International Trade (CIT) and the Court of Appeals for the Federal Circuit (CAFC) held that these glass cells were classifiable under subheading 9013.80.60, as opposed to parts of ADP apparatus in subheading 8473.30.50. As a result of the Information Technology Agreement (ITA), subheading 9013.80.60 was replaced on July 1, 1997 by subheadings 9013.80.70 and 9013.80.90. Subheading 9013.80.70 applies to LCD flat panel display modules that are for use in articles other than those provided for in heading 8528. Subheading 9013.80.90, described as "other," applies to glass cells/flat panel displays (glass sandwiches), and LCD flat panel display modules for use in articles provided for in heading 8528.

The reference to heading 8528 is due to the fact that LCD flat panel display modules for use with reception apparatus of that heading are classifiable in subheading

9013.80.90. Subheading 8529.90.53 (a parts provision for heading 8528) covers flat panel screen assemblies for various television reception devices. Since the CIT and Headquarters have held that subheading 9013.80 is more specific than a parts provision, subheading 9013.80.90 would apply to an LCD flat panel screen assembly used in television reception apparatus.

Classification Rulings

Ruling Number	Date	Description	Classification
HQ 088225	Jan. 31, 1991	LCD for price link display	8531.20.00
HQ 951288	July 7, 1992	LCD's ; 2 line; 16 character 1 line; 64 characters 1 line; 200 characters (*modified HQ 952973)	8531.20.00 9013.80.60***** 9013.80.60
HQ 953115	May 10, 1993	LCD's for avionics system	8531.20.00
HQ 952973	Aug. 5, 1993	LCD's; 80 or less characters Over 80 char., no ADP app'l Principal use in ADP	8531.20.00 9013.80.60 8471.92.30
HQ 954364	Jan. 27, 1994	LCD's for traffic alert	8531.20.00
HQ 955447	Feb. 9, 1994	LCD's with char. Graphics Glass sandwich	8531.20.00 9013.80.60
HQ 955294	Mar. 18, 1994	LCD's for bar code scan LCD's for GPS system	8531.20.00
HQ 955062	Mar. 21, 1994	LCD's for various app'l	8531.20.00
HQ 952722	Sept. 27, 1994	LCD's for var. app'l	8531.20.00
HQ 957723 (I/A 2/95)	June 2, 1995	Low Character LCD	8531.20.00
HQ 956870	July 27, 1995	LCD Panels for WP	9013.80.60
HQ 957795	Mar. 3, 1997	EL for use in ADP	8471.60.30/45
HQ 960937	Nov. 19, 1997	LCD for Pers. Digital Assistant	8531.20.00
HQ 960284	Nov. 19, 1997	1/4 VGA EL Display	8531.20.00

Additional Information

The U. S. Customs Service's home page on the Internet's World Wide Web, provides the trade community with current, relevant information regarding Customs operations and items of special interest. The site posts information -- which includes proposed regulations, news releases, Customs publications and notices, etc. -- that can be searched, read on-line, printed or downloaded to your personal computer. The web site was established as a trade-friendly mechanism to assist the importing and exporting community. The web site contains the most current electronic versions of, or links to:

- Customs Regulations and statutes
- Federal Register and public information notices
- The Customs Bulletin and Decisions
- Binding Rulings
- Publications including-
    - *Importing Into the U.S*.
    - other Informed Compliance Publications in the "*What Every Member of the Trade Community Should Know About:…"* series
    - *Customs Valuation Encyclopedia*
- Video Tape availability and ordering information
- Information for small businesses

The web site links to the home pages of many other agencies whose importing or exporting regulations Customs helps to enforce. The web site also links to the Customs Electronic Bulletin Board (CEBB), an older electronic system on which Customs notices and drafts were posted. Since December 1999, the CEBB has been only accessible through the web site. Finally, Customs web site contains a wealth of information of interest to a broader public than the trade community -- to international travelers, for example.

The Customs Service's web address is http://www.customs.gov.

The information provided in this publication is for general information purposes only. Recognizing that many complicated factors may be involved in customs issues, an importer may wish to obtain a ruling under Customs Regulations, 19 CFR Part 177, or obtain advice from an expert (such as a licensed customs broker, attorney or consultant) who specializes in Customs matters. Reliance solely on the general information in this pamphlet may not be considered reasonable care.

Additional information may also be obtained from Customs ports of entry. Please consult your telephone directory for a Customs office near you. The listing will usually be found under U.S. Government, Treasury Department.

“Your Comments are Important”

The Small Business and Regulatory Enforcement Ombudsman and 10 regional Fairness Boards were established to receive comments from small businesses about federal agency enforcement activities and rate each agency’s responsiveness to small business. If you wish to comment on the enforcement actions of U.S. Customs, call 1-888-REG-FAIR (1-888-734-3247).

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